CATALOG D-15

1937

BINOCULAR MICROSCOPES

• *Greenough Type* •

BAUSCH & LOMB OPTICAL CO. ROCHESTER, N.Y. U.S.A.

TO GREATER VISION THROUGH OPTICAL SCIENCE

BAUSCH & LOMB

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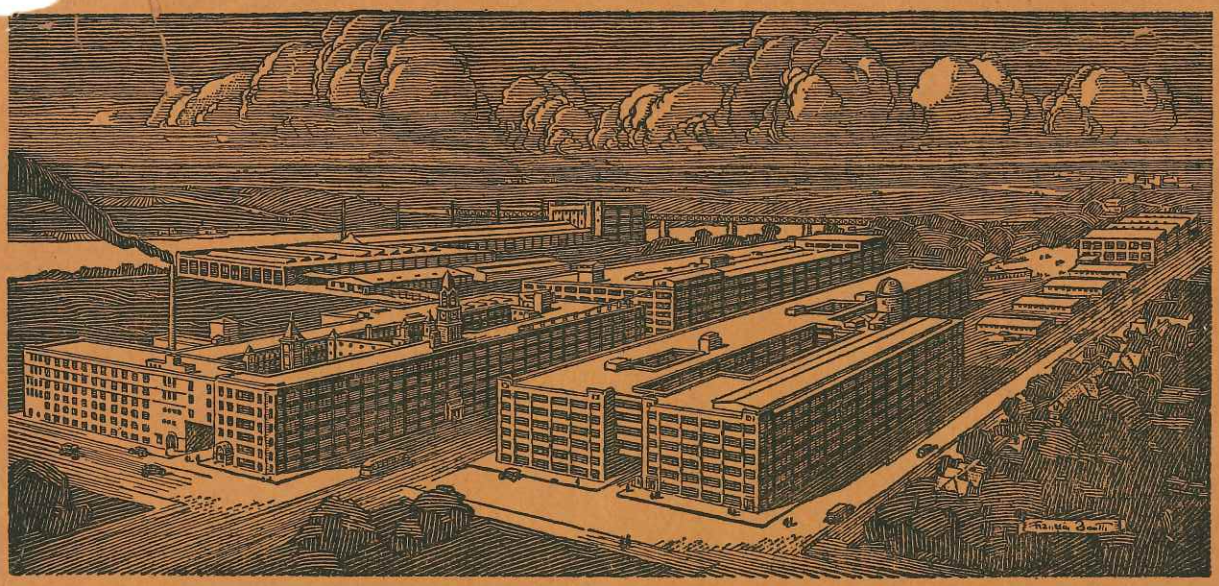
OPTICAL COMPANY . . ROCHESTER, N. Y.

359/376



An Institution Dedicated *to the* Service of Science

AS Science and Industry have pioneered new fields, the Bausch & Lomb Optical Co. has kept pace by pioneer work in optics, both design and construction, so that as needs arise they may be filled.

From its inception in 1853, the ideal back of each product of the company has been, "The user must have the satisfaction of knowing that no finer product is available."

To render better and more complete service the Bausch & Lomb Optical Co. has assumed the responsibilities that came with leadership. In many cases this has meant developing new manufacturing methods, such as the introduction of power lens grinding equipment in America. In others, it has been necessary to control raw materials, as, for instance, the establishment and continued operation of an optical glass plant, so that the limits established by theory can be more fully realized in practice.

Today, whether it be an instrument wherein optics is applied in education, in the advancement of science or industry, or in the conservation of human vision exemplified by the Orthogon Lens, each product of the Bausch & Lomb Optical Co. is backed not only by America's foremost optical institution, but also by over 80 years of experience in holding to the ideals that have made it such.

The illustrations in this catalog show Bausch & Lomb scientific instruments of current production. However, due to our constant efforts to improve and refine, this company reserves the right to supply apparatus that may differ in unimportant or minor details from those shown in the illustrations.

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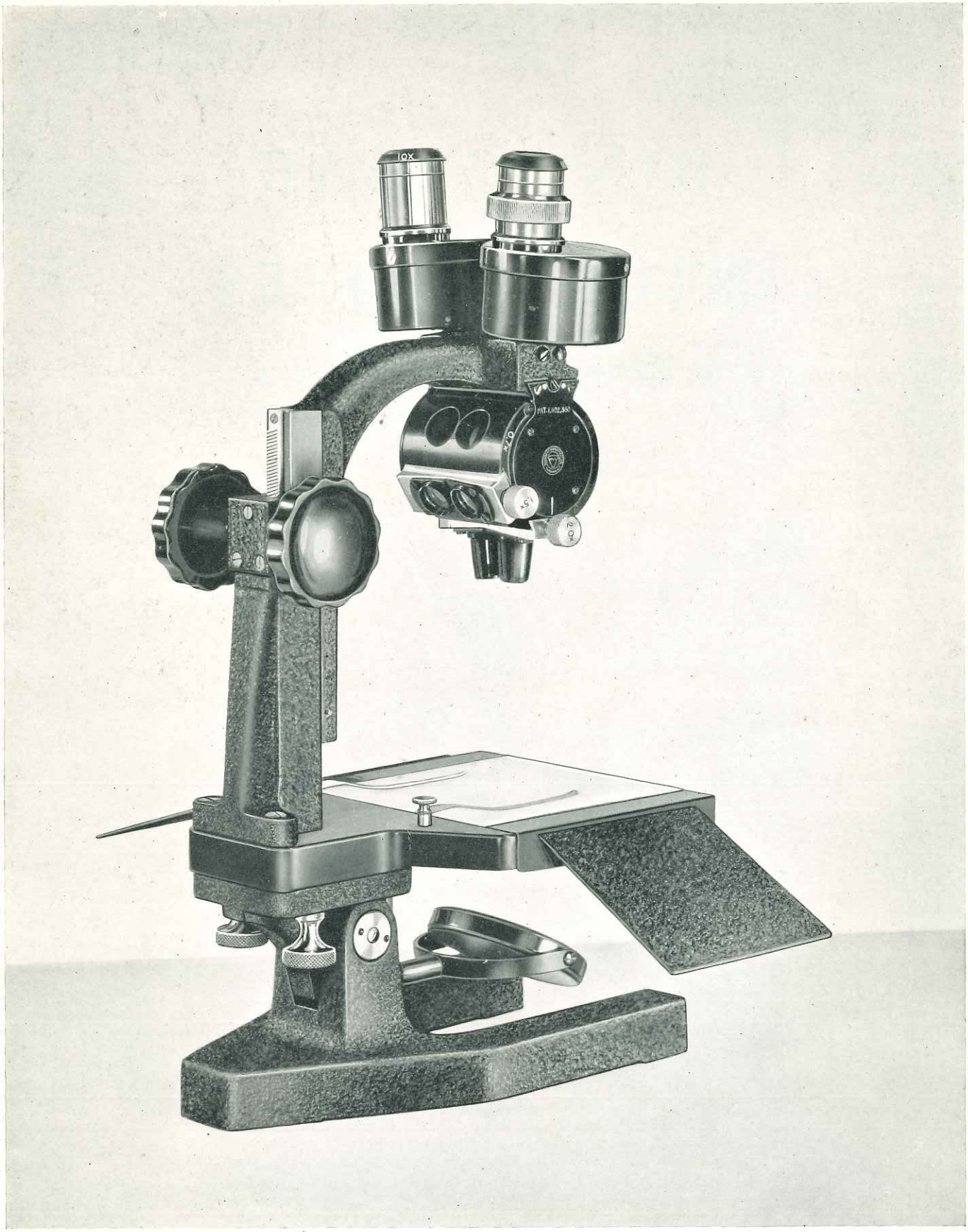
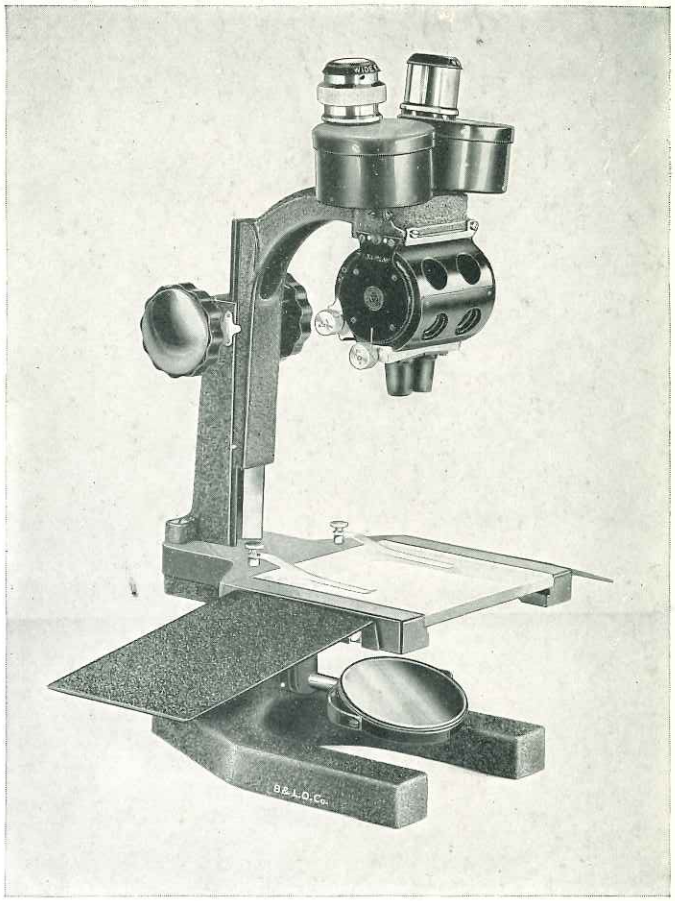


Model BKW Wide Field Binocular Microscope

BAUSCH & LOMB

THE IMPROVED KW Wide Field Binocular Microscope



Model BKW Wide Field Binocular Microscope

THE KW Wide-Field Binocular Microscope is one of the most valuable "all around" microscopes ever produced. Its uses are practically unlimited. In the bacteriological laboratory it will be found useful for colony counting. The skin specialist will find it ideal as a dermatoscope for differentiating between certain pathological conditions of the skin. The working distance is so long that the biologist can do dissecting work under it. Many branches of industry will find it incomparable for making inspections and for the examination of raw materials.

The most distinctive characteristics of the KW are as follows:

1—Extremely Wide Field
2—Long Working Distance
3—High Eye Point
4—Stereoscopic Vision
5—The Image is *not* Inverted nor Reversed
6—Instantaneously Variable Magnification with Parfocal Objectives.

The Wide Field

The unusually wide field will be readily appreciated if you will examine the table on page 5. Observe that the real field for the KW in the higher powers is very much larger than that of other binocular types, while in the lower magnifications it is more than double. This feature is of inestimable value and enables this instrument to be used for many purposes for which an ordinary microscope is useless.

Long Working Distance

The long working distance in all powers permits full advantage to be taken of the extreme range of adjustments offered in the various stands. Also it allows ample room for manipulating large specimens or petri dishes and for dissecting.

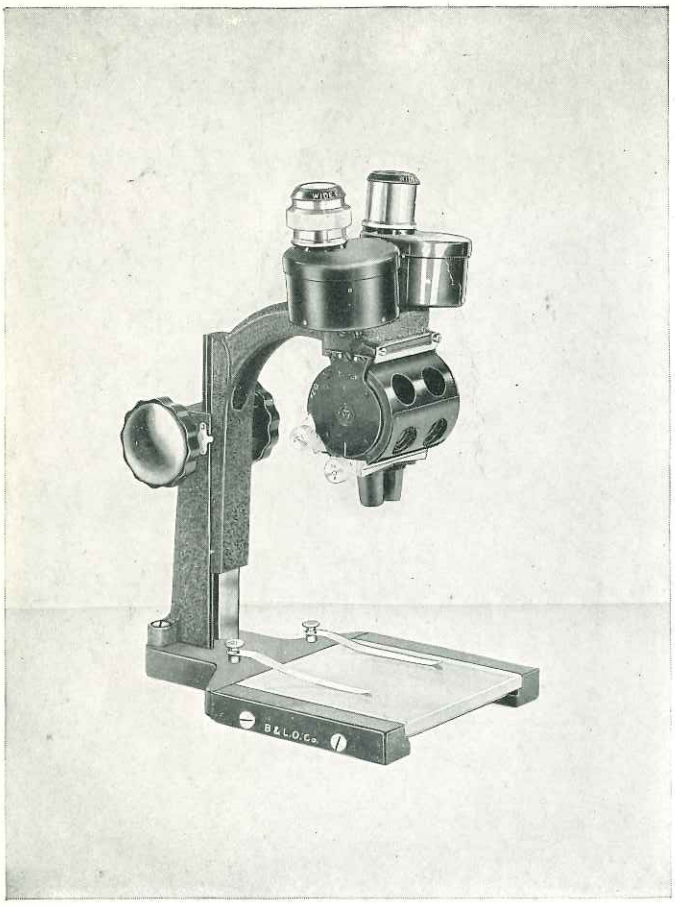
High Eye Point

The high eye point is a feature of great value because it permits the entire field to be viewed simultaneously. It is of value to those who wear glasses because their glasses need not be removed when using the instrument.

Stereoscopic Effect

The decided stereoscopic effect obtained as the result of the double point of view is a real advantage in such work as dissecting, where the perception of three dimensions is quite necessary. This feature also proves its worth in the examination of textiles and raw materials of many kinds.

When one looks through the KW the object is seen as it really is, right side up and not *inverted nor reversed*. This is the feature which makes this microscope a really invaluable instrument for dissecting. All movements of the dissecting instruments are performed naturally, so that there is no danger of ruining specimens through confusion as to which way to move the instruments.



Model AKW Wide Field Binocular Microscope

Focusing

The focusing mechanism is a diagonally cut rack and pinion, precisely machined to give positive movement.

Drum Nosepiece

The convenient and compact drum nosepiece on the Bausch & Lomb Wide Field Binocular Microscope is an exclusive feature. It holds three pairs of parfocal objectives in readiness to be swung instantly into place. Without a doubt, this is the greatest single advancement since the introduction of the Binocular Microscope.

The drum nosepiece is a patented feature which was developed and recently improved after years of experimentation. It will be found as necessary to this type of microscope as the revolving nosepiece is to the mon-objective instrument.

But not only these three pairs of objectives are available. All together six separate pairs of objectives can be used with this drum nosepiece. Only the low power 0.7× objective is permanently mounted. The others, 0.39×, 1.5×, 2.0×, 4×, and 7.5×, are instantly interchangeable. These interchangeable objectives are mounted on a beveled metal base which slides precisely and smoothly into slotted holders on the drum nosepiece. The objective mountings are fitted with a knurled knob to increase the ease of handling them. On the knob, so that it is always in plain sight, is engraved the initial magnifying power of that pair of objectives.

The AKW type of wide field binocular microscope can be purchased with or without the drum nosepiece. The drum nosepiece can be added at any time. These instruments can also be purchased with the drum nosepiece and only the permanently mounted 0.7× objective, and later, step by step, the other pairs of objectives added to the equipment.

The drum nosepiece is supplied only with the No. 5 equipments listed in the price table. It can be purchased separately with the three pairs of objectives mounted in it. This is perfectly feasible, as the nosepiece simply slips on to the microscope in the same manner as the mounted pairs of objectives.

The eyepieces are necessarily of high optical correction so as to secure at the same time a wider angle of view, high eyepoint and proper definition over the entire field.

The Stands

The range of usefulness of the KW in the examination of all kinds of specimens under comparatively low magnifications is almost unlimited. This adaptability is made possible by the fact that the KW body can be attached to several different stands, described below and on page 5.

A lamp has been especially designed for this microscope which illuminates the specimen from above. This lamp is described on page 11.

Stand A

Stand A, as illustrated above, may be placed directly upon the specimen where desired, so that different parts of large objects may be observed. A clear glass stage 100 x 100 mm is supplied with the AKW for use with smaller specimens. A metal stage plate, upon which is mounted a petri dish holder, adjustable on the ball and socket principle, may be substituted for the regular stage of the AKW.

Stand B

When the KW is used with the horseshoe base stand B, the large mirror, 60 mm in diameter, (Plano with white diffusing surface on the reverse side) supplies illumination for transparent objects. Stand B is equipped with hand rests as shown in illustrations on pages 2 and 3. Microscope BKW is AKW on Stand B.

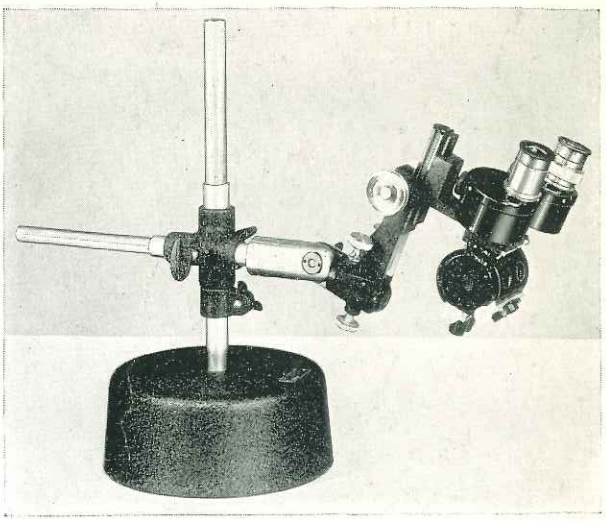
Stand S

The S Stand consists of a heavy cast iron base with a vertical post, on which is mounted a clamp to hold a horizontal bar. The pillar of the microscope is attached to this bar by means of a sleeve and wing nut. By this arrangement the microscope may be raised or lowered vertically, or revolved about a vertical axis, or even revolved about the horizontal axis to obtain good vision in planes not parallel with the working table. This stand was designed by Dr. G. Carl Huber, of the University of Michigan, especially for work in anatomical laboratories. It is also useful for geological and metallurgical work.

Magnifications and Real Fields

Objective Mag. No.	Paired Eyepieces		
	10×	15×	20×
0.39	3.9× 46.0 mm	5.9× 40.0 mm	7.8× 25.0 mm
0.7	7.0× 25.4 mm	10.5× 21.5 mm	14× 16.60 mm
1.5	15× 11.9 mm	22.5× 10.2 mm	30× 7.80 mm
2.0	20× 9.0 mm	30× 8.0 mm	40× 5.85 mm
4.0	40× 4.45 mm	60× 3.82 mm	80× 2.92 mm
7.5	75× 2.38 mm	112.5× 2.04 mm	150× 1.56 mm

Model SKW Wide Field Binocular Microscope

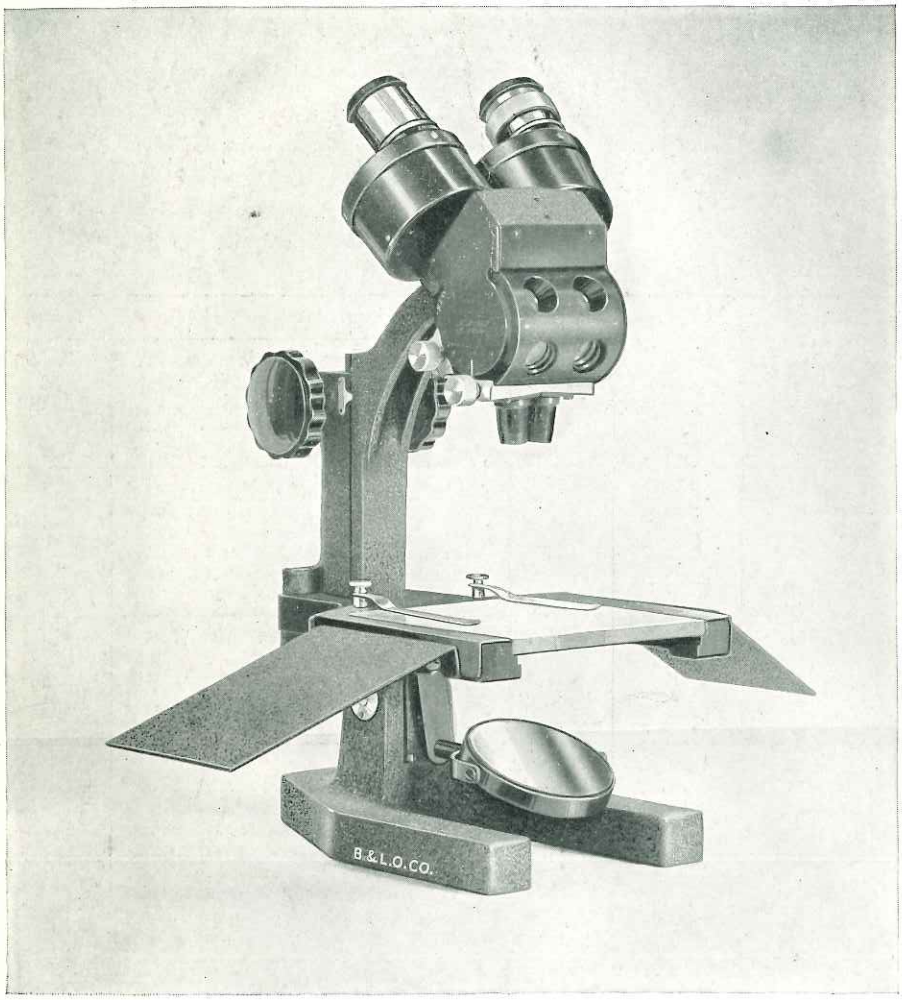


Catalog No.	Code Word	Specifications	Price
31-26-74-02 31-26-74-12 31-26-83-02	Ajegl Ajems Ajodl	AKW-1 BKW-1 SKW-1 Equipment No. 1 includes one pair eyepieces. (10×) and one set of paired objectives (0.7×), magnification 7 diameters. (No nosepiece). Case included.	$111.50 127.50 126.50
31-26-74-04 31-26-74-14 31-26-83-04	Ajehm Ajejn Ajofm	AKW-4 BKW-4 SKW-4 Equipment No. 4 includes two pairs eyepieces (10× and 15×) and three sets of paired objectives (0.7×, 1.5×, 2.0×), giving a range of magnifications 7 to 30 diameters. (No nosepiece.) Case included.	162.00 178.00 177.00
31-26-74-25 31-26-74-35 31-26-83-25	Ajekp Ajelr Ajogn	AKW-5 BKW-5 SKW-5 Equipment No. 5 is the same as No. 4 except that the three sets of paired objectives are mounted for use in the Drum Nosepiece. (See No. 31-12-82-01.) Case included.	182.00 198.00 197.00
31-12-61	Aivkl	†Paired Objectives 0.39×, for use without nosepiece	19.00
31-12-62	Adkev	†Paired Objectives 0.7×, for use without nosepiece	19.00
31-12-64	Afucz	†Paired Objectives 1.5×, for use without nosepiece	19.00
31-12-66	Afudb	†Paired Objectives 2.0×, for use without nosepiece	19.00
31-12-84	Aidby	*Paired Objectives 1.5×, for use with drum nosepiece	19.00
31-12-85	Ahuvz	*Paired Objectives 2.0×, for use with drum nosepiece	19.00
31-12-89	Agurs	*Paired Objectives 4.0×, for use with drum nosepiece	20.00
31-12-90	Agunp	*Paired Objectives 7.5×, for use with drum nosepiece	20.00
31-12-82-01	Ahwes	Drum Nosepiece with one pair objectives (0.7×) built-in, with places for two more	39.00
31-15-54-02	Adlav	Paired Eyepieces 10×	12.50
31-15-58-02	Adlew	Paired Eyepieces 15×	12.50
31-15-60-02	Agupr	Paired Eyepieces 20×	12.50
31-26-74-01	Ajefk	KW Stand only, in case	80.00
31-50-39	Ajcec	B Stand with Hand Rests only, no case	16.00
31-50-36	Ajock	Diffusing Disc for use with B Base	2.00
31-50-41	Adney	S Stand only, no case, Huber Model	27.50
31-59-18	Ajcof	Petri Dish Stage	17.00

†These paired objectives are for use on microscopes not equipped with drum nosepiece and do not require objective adapters.

*If these objectives are to be used on a KW Microscope without drum nosepiece, please specify objective adapter No. 31-50-48, code Ajcid.

The BKT Wide Field Binocular Microscope with Inclined Eyepieces



Model BKT Wide Field Binocular Microscope

Catalog No.	Code Word	Specifications	Price
31-26-80-31	Ajnip	BKT-1 Microscope with one pair of eyepieces (10×) and one set of paired objectives (0.7×) built into drum nosepiece. Magnification 7 diameters	$167.50
31-26-80-35	Ajnor	BKT-5 Microscope with two pairs of eyepieces (10×, 15×) and 3 sets of paired objectives (0.7×, 1.5× and 2.0×) in drum nosepiece. Magnifications from 7× to 30×	218.00
31-12-84*	Aidby	Paired Objectives, 1.5×, for drum nosepiece	19.00
31-12-85*	Ahuvz	Paired Objectives, 2.0×, for drum nosepiece	19.00
31-12-89*	Agurs	Paired Objectives, 4.0×, for drum nosepiece	20.00
31-12-90*	Agunp	Paired Objectives, 7.5×, for drum nosepiece	20.00
31-50-39	Ajcec	Base with Hand Rests only, no case	16.00
31-59-18	Ajcof	Petri Dish Stage	17.00

*On slide, for use with drum nosepiece.

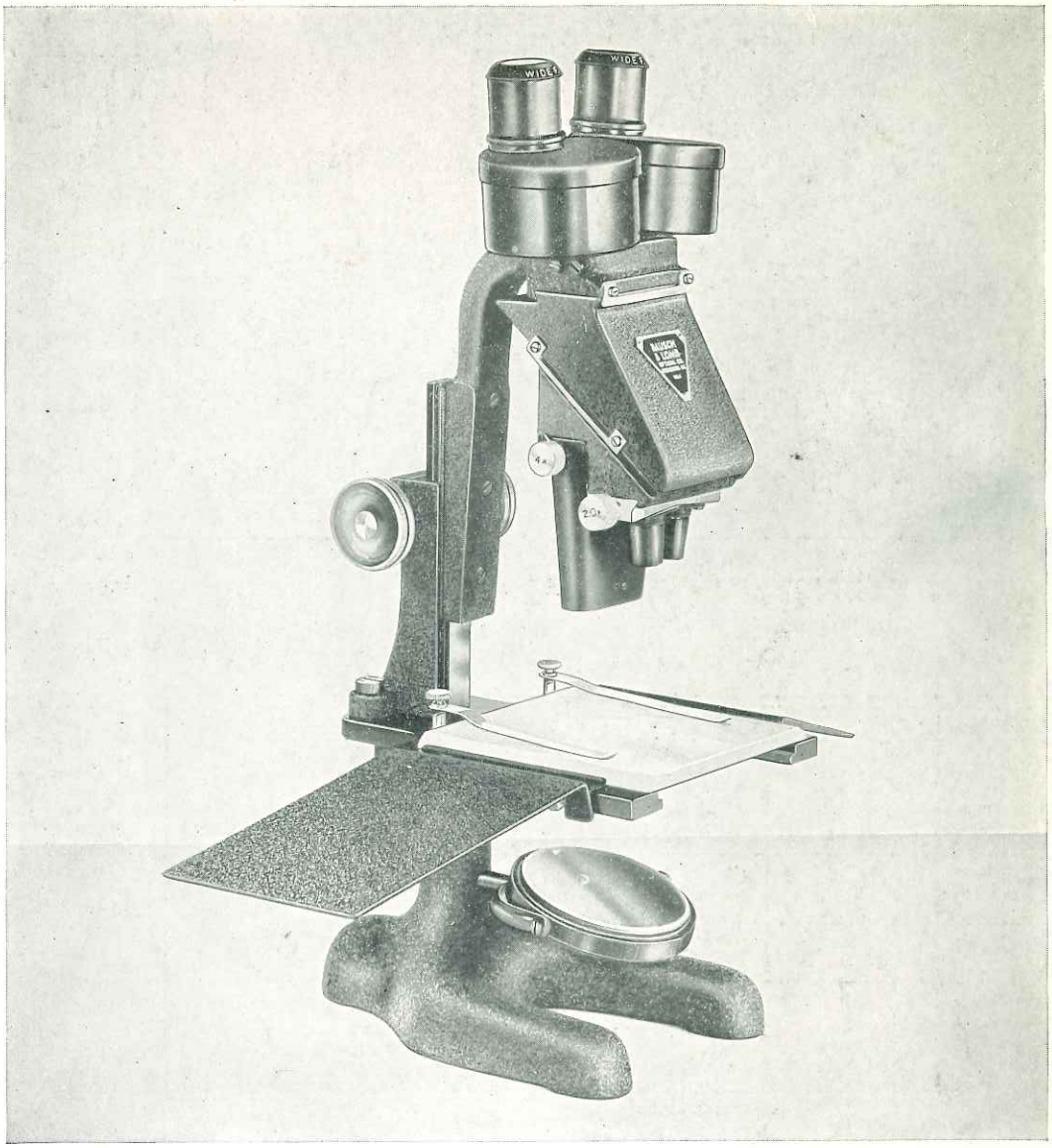
THIS Bausch & Lomb Wide Field Binocular Microscope, BKT, has, in addition to the advantages of the BKW model, an additional feature of special importance: namely, the inclined eyepiece binocular prism body.

The Binocular Body Tubes are tilted at an angle, which allows the microscopist to sit comfortably at the instrument without strain of neck and shoulder muscles. The head and neck remain in practically a normal position during observation. This freedom from strain and fatigue adds greatly to the observer's efficiency. Adjustment for interpupillary distance of the eyepieces is made by moving either or both of the body tubes.

Particular attention is called to the eyepieces. They have a comfortably large aperture and conical eyelens mounting, to add to their convenience in use when the observer is wearing spectacles. The image is not inverted or reversed and the field is unusually large. A high eye point and long working distance are other most desirable features.

The BKT is sturdily constructed to protect its inherent precision against the hard usage it will sometimes receive. Its design is simple and well balanced.

In all other details of construction and mechanical features, the BKT is identical with the BKW Stand, and the same optical accessories are available for both.



BK Junior Wide Field Binocular Microscope

Model K Wide Field Junior BINOCULAR MICROSCOPE

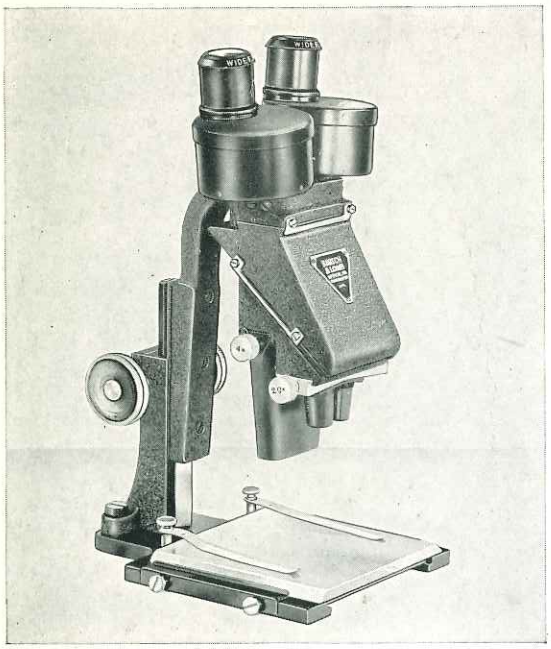
THE Model K Binocular Microscope is offered to fill the need in educational and industrial work for a Greenough Type Microscope somewhat smaller and lighter than the current B & L Wide Field Model KW, which it supplements.

The K Series is available in two forms:

The Model AK, which is used with reflected light, and the Model BK for reflected or transmitted light.

The Model AK is supplied with objectives and eyepieces to cover the general range of shop and school work. It is fitted with rack and pinion focusing adjustment and glass insert stage with metal plate, both removable, and long stage clips. Small objects are placed on the stage, with the white or black side of the metal plate uppermost to provide proper contrast. In examining large objects or surfaces, this metal plate is removed and the microscope placed directly on the work.

The Model BK has the same equipment as the AK with the addition of the B base, which includes a fork mounted mirror for transmitted light, and a pair of arm rests for steadying the hands while working under the microscope.



AK Junior Wide Field Binocular Microscope with 2×, 4× objectives and 15× eyepieces

Catalog No.	Code Word	Specifications	Price
		AK Junior Wide Field Binocular Microscopes	
31-26-73-01	Ajgaf	With 0.7× objectives and 10× eyepieces	$ 95.00
31-26-73-02	Ajgeg	With 1.5×, 4× objectives; 6× eyepieces and nosepiece	123.00
31-26-73-03	Ajgih	With 2×, 4× objectives; 10× eyepieces and nosepiece	123.00
31-26-73-04	Ajgoj	With 1.5×, 4× objectives; 10× eyepieces and nosepiece	128.50
31-26-73-05	Ajguk	With 2×, 4× objectives; 15× eyepieces and nosepiece	128.50
31-26-73-90	Ajhag	AK Stand only, in case	69.00
		BK Junior Wide Field Binocular Microscopes	
31-26-73-11	Ajheh	With 0.7× objectives and 10× eyepieces	109.00
31-26-73-12	Ajhij	With 1.5×, 4× objectives; 6× eyepieces and nosepiece	137.00
31-26-73-13	Ajhok	With 2×, 4× objectives; 10× eyepieces and nosepiece	137.00
31-26-73-14	Ajhul	With 1.5×, 4× objectives; 10× eyepieces and nosepiece	142.50
31-26-73-15	Ajibh	With 2×, 4× objectives; 15× eyepieces and nosepiece	142.50
31-26-73-91	Ajicj	BK Stand only, in case	83.00
31-50-40	Admex	B Base only for converting AK Stand into BK Stand	14.00
		Objectives and Eyepieces	
31-12-84*	Aidby	1.5×, Objectives—Paired	19.00
31-12-85*	Ahuvz	2.0×, Objectives—Paired	19.00
31-12-89*	Agurs	4.0×, Objectives—Paired	20.00
31-12-90*	Agunp	7.5×, Objectives—Paired	20.00
31-50-48	Ajcid	Adapter when nosepiece is not used	2.00
31-12-61**	Aivkl	0.39×, Objectives—Paired	19.00
31-12-62**	Adkev	0.7×, Objectives—Paired	19.00
31-12-64**	Afucz	1.5×, Objectives—Paired	19.00
31-12-66**	Afudb	2.0×, Objectives—Paired	19.00
31-15-55-02	Ajfef	6×, Jr. Wide Field Eyepieces—Paired	7.00
31-15-56-02	Ajfig	10×, Jr. Wide Field Eyepieces—Paired	7.00
31-15-57-02	Ajfoh	14×, Jr. Wide Field Eyepieces—Paired	7.00
31-15-54-02	Adlav	10×, Wide Field Eyepieces—Paired	12.50
31-15-58-02	Adlew	15×, Wide Field Eyepieces—Paired	12.50
31-15-60-02	Agupr	20×, Wide Field Eyepieces—Paired	12.50
31-19-09	Ajfuj	Dustproof Shuttle Nosepiece for two powers	8.00

*Mounted for use on nosepiece.
**Mounted for use without nosepiece. Adapter not necessary.

The Model K has the following mechanical features:

Body

Greenough Type Binocular. Adjustable for interpupillary distance.

Stage

Metal with removable glass insert, and removable metal plate, white one side, black on reverse side. Arm rests included with BK equipment only.

Mirror

One plane and one concave, in fork mount. Included with BK equipment only.

Nosepiece

A special feature of the K Stand is the Dustproof Shuttle Nosepiece. This carries any two pairs of objectives, except the 0.39× and 0.7×, in parfocal position.

Finish

Black crackle lacquer and chromium.

Optical Equipment

The full range of objectives and eyepieces is available for working magnifications of 2.34 to 150 diameters.

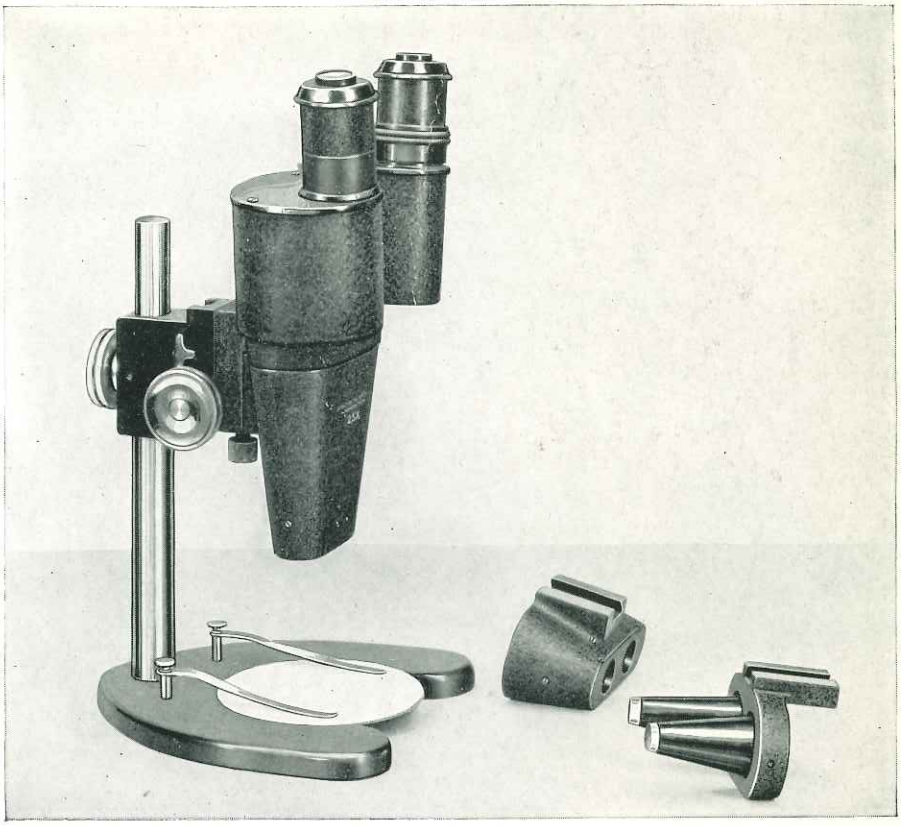
Magnification Table

Objective Mag. No.	Paired Eyepieces					
	6× Jr. W.F.	10× Jr. W.F.	14× Jr. W.F.	10× W.F.	15× W.F.	20× W.F.
0.39×	2.34×	3.90×	5.46×	3.90×	5.85×	7.80×
.7×	4.2×	7.0×	9.8×	7.0×	10.5×	14.0×
1.5×	9.0×	15.0×	21.0×	15.0×	22.5×	30.0×
2.0×	12.0×	20.0×	28.0×	20.0×	30.0×	40.0×
4.0×	24.0×	40.0×	56.0×	40.0×	60.0×	80.0×
7.5×	45.0×	75.0×	105.0×	75.0×	112.5×	150.0×

Model KX Wide Field Binocular Microscope

THE Bausch & Lomb KX Wide Field Binocular Microscope is an instrument for general low power work. It finds wide acceptance in industrial fields for inspection and "Spot checking." In biology for dissection, examination of insects and museum specimens. In mineralogy for study of mineral and fossil forms.

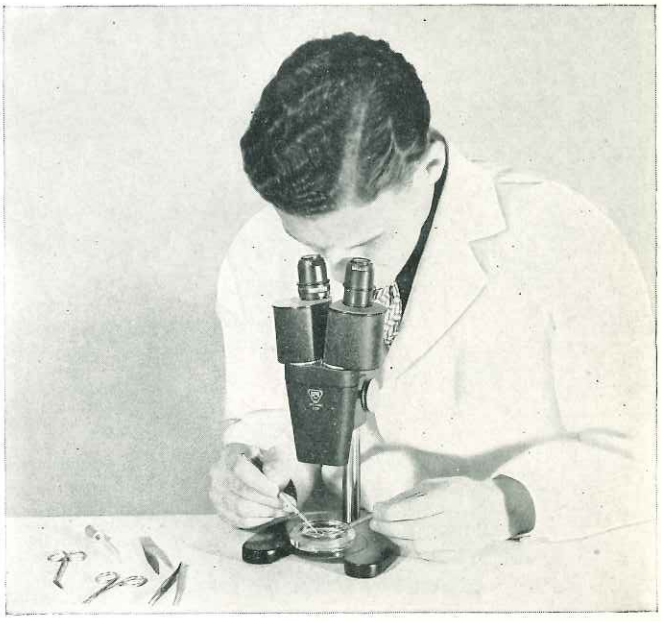
The Model KX is a Binocular Microscope of the modified Greenough type, with magnifications ranging from 4 to 31.25 diameters. Three interchangeable objectives and two eyepieces are available. The objectives are 0.5×, 1.25× and 2.5×; the eyepieces 8× and 12.5×. Both the 1.25× and the 2.5× objectives are completely enclosed within a sturdy mounting for the protection of the lenses. The 0.5× objective is made with two conical tubes extending upward into the body, with the lenses mounted at the upper ends of the

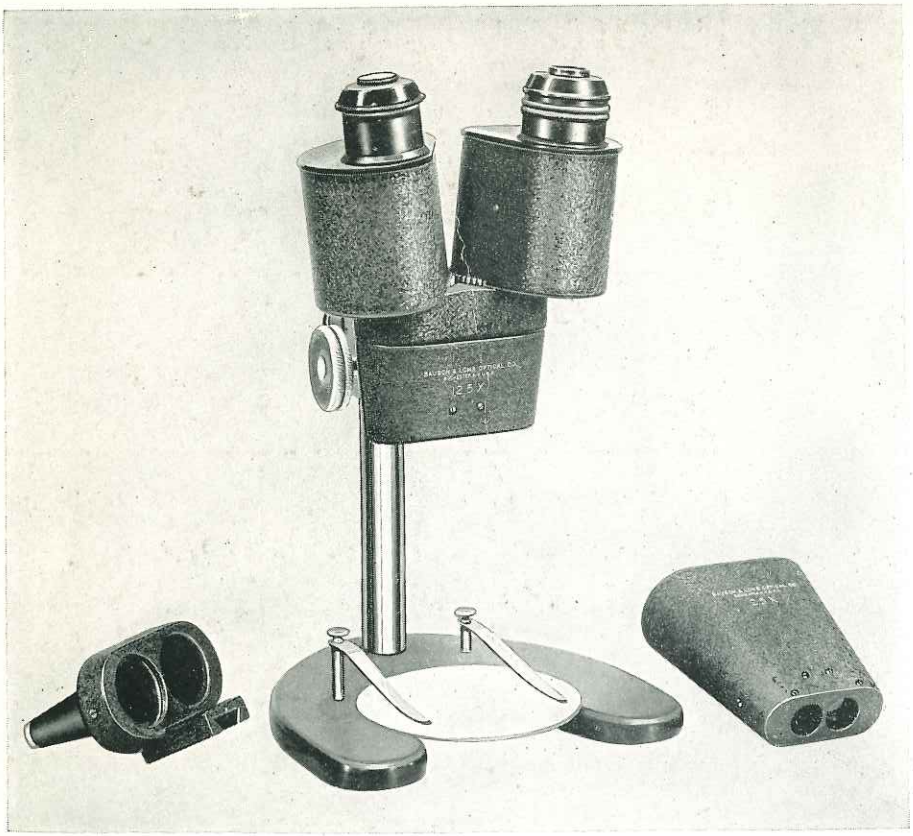


KX Microscope with 2.5× objective and 12.5× eyepieces in place.

Model KX for shop use

Model KX used in laboratory





KX Microscope with 1.25× objective and 12.5× eyepieces in place.

Catalog No.	Code Word	Specifications	Magnification	Price
31-26-05-99	Ajmem	KX Stand only, in case		$ 72.00
31-26-05-01	Ajlim	KX-1 with 8× eyepieces, and 0.5× objectives	4×	105.00
31-26-05-02	Ajlon	KX-2 with 8× eyepieces, and 0.5× and 1.25× objectives	4× 10×	124.00
31-26-05-03	Ajlup	KX-3 with 8× eyepiece, and 0.5×, 1.25× and 2.5× objectives	4× 10× 20×	143.00
31-26-05-04	Ajmal	KX-4 with 8× and 12.5× eyepieces, 0.5×, 12.5× and 2.5× objectives	4× 6.25× 10× 16× 20× 31.25×	158.00
		PAIRED OBJECTIVES		
31-12-02	Ajmin	0.5×		19.00
31-12-03	Ajmop	1.25×		19.00
31-12-04	Ajmur	2.5×		19.00
		PAIRED EYEPIECES		
31-15-64-02	Ajnam	8×		14.00
31-15-66-02	Ajnen	12.5×		15.00

Objectives and Eyepieces listed above are specially designed for use on the KX Binocular Body and are not interchangeable with Series KW and K objectives and eyepieces.

tubes. This objective is interchangeable with the other two powers.

The microscope is adjustable for height by sliding the body on the vertical pillar. Standard rack and pinion is provided for focusing. Interpupillary distance is adjusted by rotating the geared prism boxes.

The horseshoe base is large and heavy to provide stable support to the microscope. A circular disc, white on one side and black on the other, is provided to give proper background. Two long stage clips are supplied for holding flat work on the stage.

For examining objects too large to place on the stage, the disc is removed, and the microscope itself is placed directly on the work.

The base is finished in gloss black enamel. The prism boxes and outside of the objective mountings are finished in crystal black. The vertical column, stage clips and focusing buttons are bright chromium plated.

Magnifications and Real Fields

KX Objectives and Eyepieces

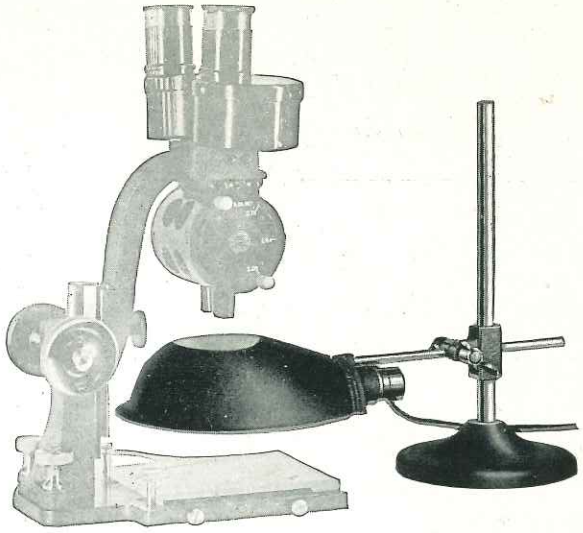
Objective	8× Eyepiece	12.5× Eyepiece
0.5×	4× 40.0 mm	6.25× 36.0 mm
1.25×	10× 16.0 mm	15.6× 14.4 mm
2.5×	20× 8.0 mm	31.25× 7.2 mm

WIDE FIELD LAMP

THIS lamp is the first of its kind for complete illumination of opaque objects upon the stage of a low power binocular microscope. Even though the specimen be deep and cup-like with many irregularities, this lamp, by means of its ellipsoidal reflecting surfaces, throws light into every corner and recess, eliminating all shadows.

The Wide Field Lamp illuminates a very large field, but because of the shape of its reflector the light is all concentrated upon the stage of the microscope and no annoying reflections strike the eyes. Enough light is thrown out at the sides to illuminate a note pad or drawing paper beside the instrument in a dark or semi-darkened room.

This lamp consists of a heavy base and vertical rod upon which the lamp can be adjusted for height. The reflector is pear-shaped with a circular hole at the top for viewing the specimen. The light is reflected at all angles into the field of observation.



Wide Field Lamp, No. 31-33-23-11

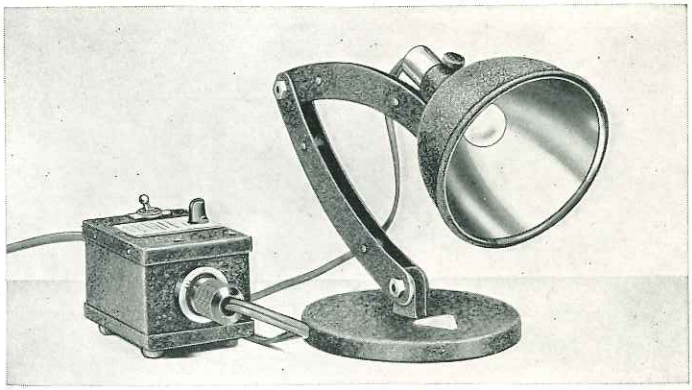
Catalog No.	Code Word	Specifications	Price
31-33-23-11	Ahxas	Lamp for 115V, A.C. or D.C.	$12.00
31-31-20	Acufv	Bulb, 15 Watt, 115V, A.C. or D.C.	.60

REFLECTOR LAMP

THE Bausch & Lomb Reflector Lamp fills a definite need in work with the Wide Field Binocular. This one illuminator meets all the varied requirements. It consists of an *elliptical* mirror with provision for adjustment so that diverging, parallel, or converging light is available.

The jointed arm mounting permits illumination from all angles and above or below the stage. The adjustment for focusing the light makes it possible to work with the lamp well outside the field of actual operations.

The transformer and resistance units available for use with this lamp adapt it for use on either D.C. or A.C. The adjustable transformer is especially desirable; with it, the observer can adjust the light intensity exactly and easily to the work in hand.



Reflector Lamp, No. 31-33-11-01

Catalog No.	Code Word	Specifications	Price
31-33-11-01	Ajnus	Lamp	$15.00
31-36-45	Ajobj	Transformer, adjustable	7.50
31-36-44	Aifcy	Resistance—for 115V, D.C	6.00
31-36-47	Acwec	Transformer, fixed	6.00
31-31-16	Ajojr	Bulb, 6.5V, 25.5 c.p. frosted	.75

PAIRED EYEPIECES and OBJECTIVES for KA TYPES

Eyepieces

Catalog No.	Code Word	Specifications	Price
31-15-05-02	Abehp	Paired Eyepieces 5.0×	$6.00
31-15-06-02	Abejr	Paired Eyepieces 6.4×	6.00
31-15-07-02	Abeks	Paired Eyepieces 7.5×	6.00
31-15-10-02	Abelt	Paired Eyepieces 10.0×	6.00
31-15-12-02	Abemv	Paired Eyepieces 12.5×	6.00

Pairs of eyepieces specially selected for equality of magnifying power, location of focal plane, and size of field are listed for the earlier KA types. They are all made parfocal so that in interchanging them only a slight change in the adjustment is necessary.

Objectives

For the earlier KA Greenough Binocular Microscope, we furnish five pairs of objectives mounted on slides. Each pair of objectives is centerable in an unusually substantial base made one-piece with the slide, and may be interchanged without disturbing the centering. The size of the centering screws assures stability, once the objectives are properly centered, as they will be found to be upon receipt from factory. In the higher powers one objective of each pair has a focusing collar which permits compensation for any difference in vision of the eyes of the individual. All objectives are standard quality achromatic.

Catalog No.	Code Word	Specifications	Price
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31-12-48	Abebj	Paired Objectives 48 E.F.	19.00
31-12-50	Abeck	Paired Objectives 40 E.F.	19.00
31-12-52*	Abedl	Paired Objectives 32 E.F.	20.00
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*With compensating collar for independent focusing of one of the objectives.

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